

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE****BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

In re Application of

Sarkhel et al

GROUP: 1755

SERIAL NO.: 09/771,240

EXAMINER: SIKYIN IP

FILED: January 26, 2001

FOR: LEAD FREE HIGH TIN TERNARY SOLDER ALLOY OF TIN, SILVER AND  
BISMUTH

Commissioner for Patents  
P.O.Box 1450  
Alexandria, VA 22313-1450

Declaration Under 37 CFR 1.132

I, Amit Kumar Sarkhel as one of the inventors and the named applicant of  
this application hereby declare that:

1. I hold a PhD in metallurgical science and have read the EXAMINER'S  
ANSWER paper No.020904 in response to the brief filed by applicant on November 05,  
2003

2. On page 7 of the EXAMINER'S ANSWER. , second paragraph, the  
Examiner makes the following statement : "But, col. 4, lines 41-50 of Vianco are directed  
to a Bi-Sn binary alloy". and further states that "Appellants attention is directed to col. 4  
lines 51-57 that up to 7 wt% Bi is allowed with Sn-Bi-Ag system to form an eutectic  
composition".

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\*\*\* TOTAL PAGE.01 \*\*\*

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3. The above statement of the Examiner was not previously made during the prosecution and is both technically incorrect and misleading for the following reasons:


3.1 The objective of Vianco is to form a lead free solder alloy composed of a binary eutectic alloy of tin and silver with a bismuth addition forming what is known to those skilled in the art as a "pseudo binary eutectic". Simply stated, Vianco wants to retain the benefits of a binary eutectic alloy of tin and silver with a reduced melting point by adding thereto a little bismuth but not enough to convert the binary eutectic alloy into a ternary eutectic composition. This is discussed by Vianco throughout the description. In fact the Abstract itself makes this very clear. It is also consistent with col. 4 lines 51-57 of Vianco which the Examiner has completely misread in making the false statement that "Appellants attention is directed to col. 4 lines 51-57 that up to 7 wt% Bi is allowed with Sn-Bi-Ag system to form an eutectic composition".

3.2 Column 4 lines 51-57 of Vianco is not a teaching of a ternary composition of Sn-Bi-Ag with Bismuth of up to 7wt %. To the contrary Vianco specifically states that this relates to a teaching of bismuth with respect to tin, i.e., to a binary eutectic of bismuth and tin. There is additional wording in Vianco on lines 54-57 which reads --"and the silver content to satisfy the eutectic composition, establishes the silver-bismuth ratio in the 0 to 50 wt % bismuth area of Figure 3"--This additional wording is difficult to comprehend but is clearly referring to a binary eutectic composition and not a ternary eutectic. The wording is somewhat confusing since the ratio should have been expressed as a number or as a fraction and not in wt % and further, the Vianco reference actually shows a tin-silver phase diagram in Figure 3 which is clearly in error from Vianco's statement in line 51 that "The bismuth-silver phase diagram is shown in FIG. 3". Moreover, this error was not acknowledged by the Examiner. Regardless of what Vianco intended by this additional wording it is clearly inconsistent with the meaning suggested by the Examiner which is inaccurate and out of context. Vianco does state that for a binary eutectic of bismuth and tin the content of

bismuth can be raised to no more than 7wt%. Obviously if silver is to be included the content of bismuth must be proportionally lower. What is important from this paragraph is that Vianco is not suggesting how to formulate a lead free alloy composed of a ternary eutectic of Sn-Bi-Ag but is instead teaching that the addition of bismuth must be sufficiently limited and preferably below 5 wt % so as to retain the pseudo binary eutectic characteristic of tin and silver with a reduction in its melting point.

3.3 The paragraph following Table 1 on page 5 lines 41-45 of Vianco relates directly to the last alloy in the Table and indicates that this alloy contains too much bismuth since it results in a saturated phase of tin within the solder. Accordingly, this represents a rejected alloy composition and cannot be interpreted to be only a less preferred composition as the Examiner chooses to do without any support thereof.

I hereby declare that all statements made herein from my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

  
Amit Kumar Sarkhel